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## UNITED STATES DEPARTMENT OF AGRICULTURE

## FOOD DISTRIBUTION ADMINISTRATION

## FRESH FRUIT AND VEGETABLE INSPECTION SERVICE

MARKET INSPECTION OF FRESH PEAS

Green or fresh peas are widely grown in the United States as garden or a local market garden crop, but their production on a large scale for carlot shipment is limited to certain districts in a comparatively few States, mostly in the far West. California far exceeds all other States in total carlot shipments, the other important shipping States in the West being Colorado, Idaho, and Washington. Utah and Oregon also ship carlots, but not in quantities comparable to the other Western States mentioned. Peas from these Western States are distributed to practically all the large markets in the country. Florida, North Carolina, Mississippi, South Carolina and Virginia are the most important shipping States of East and South, mentioned approximately in order of the quantities they ship. Their shipments go almost exclusively to markets along the Atlantic Seaboard, with the exception of Mississippi, which ships to Mid-Western as well as Eastern markets.

(1)

VARIETIES - CLASSIFICATION

In Miscellaneous Publication No. 170, of the U. S. Department of Agriculture, the principal varieties of peas are classified according to character of the stems, season, and size of pods. For purposes of the market inspector, the size of the pods is probably the only important factor of the three. Following is a grouping on the basis of pod size for the leading commercial shipping varieties:

(2)

<u>Small Pod Varieties</u>	<u>Large Pod Varieties</u>
Alaska	Telephone
Admiral	Alderman
Nott's Excelsior	Laxtonian
	Laxton's Progress
	Stratager
	Hundredfold
	Giant Stride
	Morse's Market
	World's Record

In general, the large podded varieties are preferred on account of generally superior quality, but some of the smaller podded sorts are shipped, especially from Florida and the other eastern States. Telephone and Laxtonian are old varieties, not as common commercially as formerly. Giant Stride and Laxton's Progress constitute a majority

(3)

of the commercial shipments from California, with Stratagem and Hundredfold the larger portion of the remainder. World's Record is a variety extensively grown in Mississippi.

#### METHOD OF SAMPLING AND INSPECTION

(4) In inspecting peas, only a relatively small portion of the contents of each container opened can be sorted. Therefore, the inspector should make sure that the sample selected is reasonably representative of the contents of the container. This will necessitate removal of part of the contents in order to avoid sampling only the peas in the top of the package. In offices equipped with balances for peanut inspections, it is desirable to draw samples to be sorted in the office, where percentage of defects can be determined carefully by weight. For an unrestricted inspection on a carload of one grade or brand, at least 10 different packages should be sampled, taking about 1 pound from each. Unless there is evidence of irregularity these samples may be mixed and handled as a composite sample. After mixing the sample it may be reduced, for convenience, to 3000 grams (about 6.6 lbs.) and the percentage of defects based on examination of this quantity. In case of restricted inspections, a somewhat smaller number of samples may be sufficient, depending somewhat on the degree of restriction, but in no case should a certificate be based on less than 6 samples. In cars containing two or more brands or lots, a composite sample should be taken from six or more packages in each of the lots, the number of packages sampled depending on the apparent quantity in the lot. Each of these lots should be analyzed separately and reported separately unless they are found to be of practically the same quality and condition. In case of extreme irregularity, which bears no relation to marks or brands, it may be desirable, in addition to the usual composite sample, to draw separate samples from two or three of the worst and two or three of the best packages in order to be in position to report the approximate range in quality and condition.

(5) Where peanut grading equipment is not available, reasonably accurate results can be determined by weight, by use of our regular spring balances, but in all cases, the weights should be recorded in ounces, and the 5 lb. scale should be used in weighing the defects. If several individual samples are sorted at the car, it is suggested that 50 ounces be taken as the sample from each container examined. When a composite sample is taken to the office for grading, at least 100 or 150 ounces should be sorted. Reducing the sample to a round number of ounces and recording all weights in ounces rather than in pounds or fractions will greatly facilitate the determination of percentages.

As a general practice, determinations should be made by weight on a composite sample (or samples) as indicated above. However, there may be situations in which time does not permit taking a sample to the office and in winter, account low temperatures, it may be impracticable to sort, at the car, the quantities suggested above. Under these conditions, the following method may be used with reasonably accurate results: Make a count on 100 pods from each sample examined and segregate the defects. This will give the percentage by count, from which the percentage by weight should be estimated for each sample. If the defects consist largely of poorly filled and excessively small pods, the percentage by weight will obviously be lower than the percentage by count. If the defects consist largely of over-mature, well filled pods, the percentage by weight may be greater than that by count. Experience will enable one to estimate the percentage by weight from the count with considerable accuracy. This method should never be used for appeals, and should be avoided if possible in case of borderline cars or those involved in serious controversy. (6)

#### PRODUCTS INSPECTED AND DISTINGUISHING MARKS

See I. H. B. Part II. (7)

The following information should be given under this heading:

1. The type of peas (if specifically desired; see below).
2. The type of container.
3. Distinguishing marks, if any.
4. Quantity, if not a full carload in a car.
5. State of origin, if not indicated by the identifying marks or by shipper's address.

1. Type of peas. Ordinarily the type need not be mentioned. However, cases may arise in which a description of size and shape, or size, shape and color of pods may tend to prove whether or not the stock consists of the variety specified. For example, if a buyer purchased a car of Telephone peas, and received a car consisting of short, blunt, cylindrical pods, a mere description would tend to show that the stock is not of the Telephone variety. In most cases, however, it will probably be impossible to settle variety or type controversies. While a familiarity with the leading commercial varieties is a distinct advantage, it will probably never be safe definitely to certify the variety. (8)

(9) 2. Type of Container. The bushel hamper and the tub-type bushel basket are the most common containers used in carlot shipments of peas. Within recent months (1942) hampers have been partially replaced by "bushel tubs" for shipments from California. Shipments from Mexico are generally in bushel hampers. In some Eastern districts 5/8 bushel hampers are used. New York ships in bushel baskets.

(10) Examples: Products Inspected and Distinguishing Marks:

- (1) Fresh PEAS in 32-qt. hampers, label under covers shows "Foothill Brand" or "Mar-Monte Brand," manifest shows 442 hampers Foothill and 209 hampers Mar-Monte.
- (2) Fresh PEAS in tub-type bushel baskets labeled "Finley Brand-----."

#### CONDITION OF LOAD AND CONTAINERS

See I. H. B. Part II.

(11) Peas in hampers are almost invariably loaded 7 rows wide and 3 layers high entire length of car, alternate hampers inverted.

(12) Bushel baskets are usually loaded 6 rows wide, 5 layers high, alternate baskets inverted.

(13) Top ice is now almost invariably used on shipments of fresh peas. It may be either in chunks or crushed. In some cases both crushed and chunk ice are used. Indicate the kind and approximate depth or amount of top ice. In some cases, crushed ice is found to a depth of 4 to 6 inches in the doorway portion of the load, but there is little or none in the portions of the load near the bunkers. If there is no top ice present, this should be mentioned.

(14) Whenever the load is shifted and disarranged, this should be mentioned and the extent of the damage described as accurately as possible, giving the approximate number of containers which are crushed out of shape or broken open. It is especially important to mention any containers which show contents spilling.

(15) Examples: - Condition of Load and Containers.

(1) (Hampers) - Through load, 7 rows wide, 3 layers high, stripped; crushed ice over top of load about 4 to 6 inches deep in doorway portion, tapering down to 1 or 2 inches at bunkers.

(2) (Tub bushel baskets) - Through load, 6 rows, 5 layers. Top of load covered with crushed ice to depth of 1 to 1-1/2 feet.

PACK

Fresh peas are usually packed without package ice. Whenever packages are found to contain ice, it should be mentioned, and the amount indicated either by showing the approximate number of pounds per package or by use of general terms such as "moderate amount--" or "small amount--." (16)

The filling of packages should be reported with reasonable care, though it is not an accurate indication of the quantity contained in the packages. In case of controversy, it is preferable, whenever possible, to determine the average net weight per package. Ordinarily, however, one or more of the following terms should be selected to describe the pack of any particular lot. These apply to both hampers and bushel baskets. (17)

Well filled means that the package is not less than level full, with the contents generally in contact with the lid or cover.

Fairly well filled means that there is a slight degree of looseness or slackness, with the contents in any given package averaging not more than 1/2 inch below the lid or cover.

Slack means that the contents are more than 1/2 inch below the lid or cover. Whenever the term slack is used the extent of the slackness should be described in inches or inches and fractions of an inch.

Usually no attempt is made at facing, but sometimes hampers or baskets are faced by arranging the exposed pods in circles. When this has been done, it should be mentioned, as in example 2 below. (18)

Examples: - Pack.

- (1) Hampers mostly well filled, some 1 to 1-1/2 inches slack.
- (2) Hampers fairly well to well filled, attractively ring-faced.
- (3) (Tub-type bushel baskets) Fairly well to well filled, from 2 to 4 pounds of crushed ice in center of each basket.

SIZE

Size should be reported as to length of pods in inches, reporting to the nearest quarter inch. Unless size is very nearly uniform, the range of length should be followed by a "mostly" range. It is usually well to use the term "generally" in reporting the range, in which case, a negligible quantity above or below the general range should be ignored. The terms "small," "medium" and "large" are indefinite and should not be used. "Excessively small" pods (those which are so short that there is space for only 2 peas which are

fairly well or well developed), need not be reported under this heading, but will be grouped with the other defects reported under quality. The length of the pods means the over-all length from the tip to the point of attachment with the stem. Some pods have long tips, but as a rule, the length of the tip is of no consequence and would seldom, if ever, amount to more than 1/8 inch. The length of the pods should be reported to the nearest quarter inch.

Example - Size:

1. Pods generally 2-1/2 to 4-1/2 inches, mostly 3 to 3-3/4 inches long.

(20)

QUALITY

See I. H. B. Part II.

Under this heading should be reported:

1. Shape of pods.
2. Filling of pods.
3. Maturity.
4. Grade defects.
5. Under some conditions cleanliness (or lack of cleanliness) should also be specifically covered.

(21) Practically all inspections are made on the basis of the U. S. Grades, U. S. No. 1 being the commonly used standard. In describing peas under the Quality heading, the definitions of terms for the U. S. Grades should be kept clearly in mind.

(22) 1. Shape of pods: U. S. No. 1 and U. S. Fancy require that the pods be "not badly misshapen." Pods which are slightly to moderately crooked or slightly deformed obviously should not be scored as defects. Refer to the pictures with which each office is supplied for an accurate conception of what constitutes "badly misshapen."

(23) 2. Filling of pods: U. S. No. 1 requires that pods be "fairly well filled" and U. S. Fancy requires that they be "well filled." These terms cover the development of the seeds in the pods, as well as the proportion of the space which must be occupied by the seeds. When pods are reported as "fairly well filled" or "well filled" it is not necessary to mention that the seeds are

fairly well to well developed. On the other hand, if not more than half of the space in a pod, where peas can usually attain full development, is occupied by fairly well to well developed seeds, the pod cannot be reported as fairly well filled, even though it contains, in addition, some poorly developed seeds. The same principle applies to application of the term "well filled."

3. Maturity: U. S. No. 1 and U. S. Fancy both provide that the peas shall not be "overmature." The definition of this term in the U. S. Standards should be noted carefully. The color of the pods is the best and most apparent indication of overmaturity. When color of the pods is normal, it should be reported as "good green color." Pods which are definitely yellow or grayish yellow are almost invariably overmature with seeds developed beyond the desirable stage for fresh peas. The grades also require that the peas be fairly tender. Hard or tough seeds are nearly always a result of overmaturity. The color of the peas is usually, but not always, a reliable indication of the tenderness or toughness of the seeds. A good test is to take a seed between thumb and forefinger, and if pressure crushes the cotyledons, the pea may be regarded as sufficiently tender for U. S. No. 1 or U. S. Fancy. If the cotyledons are so firm that pressure causes them to split the skin, slip and fly apart without crushing, the seed is too tough to come within the meaning of "fairly tender."

When the peas are not overmature and the pods are reported as "good green color" it is not necessary to mention that the seeds are fairly tender or tender. When a considerable percentage of overmature pods are reported, it is desirable to indicate that the seeds are not fairly tender.

5. Grade defects: Overmature and poorly filled pods are usually the most common defects. Excessively small pods (those so short that there is space for only two peas which are at least fairly well developed peas), misshapen and scarred or bruised pods, are also common. Excessively small pods should not be mentioned under Size, but should be included with the other defects reported under Quality.

The whitish areas which are to be found in practically all lots of green peas are due to bruising. A great many minor surface bruises occur in ordinary handling, and in a short time appear as whitish scars. Pods which are severely scarred by bruising should be scored as grade defects, but be sure to avoid scoring pods with scars which are not sufficient to cause "damage" to the individual pod or to the appearance of the lot. These whitish spots have frequently been mistaken for injury caused by thrips. However, scars due to bruising are larger and more likely to have a greenish tinge.

(28) All of the common market diseases of peas are described in Miscellaneous Publication No. 440, a copy of which has been furnished to each market inspector. One of the diseases which most commonly affects the quality of market peas is Pod Spot. Because of the fact that this disease occurs in spots of varying size and number, uniform interpretation of what constitutes "damage" is difficult. For this reason the degrees of spotting described below will be helpful. Pods shall not be considered as damaged and scored if they show:

- a. One spot not over 1/8 inch in diameter.
- b. Two spots affecting an aggregate area of not over 3/16 inch in diameter.
- c. Three small spots, each not over 1/16 inch in diameter.  
Any degree of spotting materially greater than that indicated above should be scored as a grade defect of U. S. No. 1.

(29) Other diseases which may affect quality and grade are Mosaic, Scab, and Downy Mildew. Mosaic causes pods to become roughened and misshapen or distorted. These should ordinarily be described as "misshapen pods", but if the inspector is sure of his diagnosis, he may use some such description as ".....misshapen or distorted due to Mosaic."

(30) Downy Mildew on peas is generally not of much consequence except as a disease of the vine during wet moderately cool seasons. Within the past few years, however, this disease has been of market importance because of the blemishes produced on the pods. The oospore stage of the fungus sometimes forms within the walls of the growing pods and causes yellowish blotches or slightly raised yellow blister-like areas which greatly injure the appearance of the pods. There is no visible surface mycelium and usually none is formed within the pod although often a white mold-like growth from the inside walls of the pod is formed, due to the stimulating effect of the fungus.

(31) Since the development of these yellow blotches and blisters takes place during the development of the pods, and requires considerable time, whenever this disease is sufficient to cause damage it should be handled as a grade factor, rather than as condition.

(32) In scoring Downy Mildew, if the outside of the pod is satisfactory, slight Mildew injury inside the pod, providing the peas themselves are not affected, should be permitted in U. S. No. 1 grade.

6. Cleanness. Usually this need not be mentioned, but whenever an appreciable amount of the pods are caked with dirt or otherwise dirty enough to constitute "damage by dirt" these should be reported and scored as defects. Occasionally peas may be encountered in which the general appearance of the lot as a whole is so affected by more or less dirt on all pods that the lot must be considered as damaged. (33)

For examples of QUALITY statements see pages 11, 12 and 13. (34)

CONDITION

(35)

Under this heading should be reported:

1. Freshness.
2. Condition of calyxes.
3. Color (under certain conditions).
4. Decay.
5. Other condition defects.

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1. Freshness. The majority of shipments of peas reach destination in fresh condition, but may become wilted if top ice is exhausted and not replaced. (36)

2. Condition of Calyxes. Calyxes which are yellow, wilted and brown or black are generally detrimental to the sale of peas and should be reported. Discoloration of calyxes is not a factor in U. S. No. 1 Grade unless there are enough black calyxes to damage the appearance of the lot. U. S. Fancy peas and peas represented as "U. S. No. 1, Green Calyxes" are required to have an average of 3/4 or more, by weight, and not less than 1/2 of the pods in each container, having calyxes of fairly good green color. (37)

4. Decay. Watery Soft Rot is probably the most common decay found in green peas. Gray Mold Rot and Bacterial Soft Rot are sometimes found. The general descriptions of these decays in the disease bulletins will be of assistance in identifying them on this product. (38)

Decay frequently occurs irregularly in peas, and care should be exercised when decay is present to select samples that will be reasonably representative of the containers from which they are taken. (39)

5. Other condition defects. Probably the most common other condition defect is cracking of the skins of the seeds. Inspectors should pass lots which show not more than 10% of the peas with cracked (40)

skins. When less than 10% of the seeds are affected, do not add this percentage to the percentage of other grade defects. Whenever more than 10% show this defect, they should be scored as a condition defect (at shipping point they are scored as a grade defect). It should be distinctly understood that the percentage of peas affected is calculated on the number of peas and not on the number of pods which contain peas showing cracked skins. The percentage may be determined with sufficient accuracy by counting 300 peas shelled from pods taken at random from the mixed composite sample. The percentage of affected peas can then be determined by count.

(41) Peas showing sprouted seeds should be scored and handled in the same manner as those showing cracked skins.

(42) For examples of Condition statements see pages 11, 12 and 13.

GRADE

(43) Nearly all inspections will be reported on the basis of "U. S. No. 1" or "U. S. No. 1, Green Calyxes." U. S. Fancy may be used for exceptionally fine stock or, if it is apparent that the lot is intended for this grade, but this is exceptional. Western peas are commonly sold on the basis of a percentage of U. S. No. 1. When a shipment fails to meet the requirements of U. S. No. 1, the inspector should report the approximate percentage of U. S. No. 1, if there is reason to believe that the sale may have been made on such a basis, or if the applicant desires the percentage of U. S. No. 1 for resale purposes. Percentages of "U. S. No. 1, Green Calyxes" or U. S. Fancy should not be given.

(44) In reporting the percentage of U. S. No. 1 the percentage of grade defects, plus the percentage of decay, if any, (or any other condition defects) should be subtracted from 100%, and the remainder adjusted to the nearest number divisible by 5, except that lots showing less than 13% total defects should be reported to the exact whole number. Accordingly, a lot showing total of 18% grade and condition defects should be reported "approximately 80% U. S. No. 1 quality," while one with 12% defects should be reported as "88% U. S. No. 1 Quality."

(45) Whenever decay or other condition factors appreciably affect the percentage of U. S. No. 1 the word "now", should be used in connection with the percentage reported, even though the grade defects alone are in excess of the tolerance. Example: (Lot showing 15% grade defects and 4% decay), - "Stock fails to grade U. S. No. 1 on account of grade defects in excess of the tolerance, but is now approximately 80% U. S. No. 1 quality, 4% decay."

Ordinarily, the percentage of U. S. No. 1 quality will not be desired when less than 50%, but may be given if insisted upon by the applicant. (46)

For examples of Grade statements see pages 11, 12 and 13. (47)

REMARKS

See heading I. H. B. Part II.

If the inspection is restricted to a certain part of the load, a statement to that effect should be made under this heading. If the applicant makes the load accessible for unrestricted inspection, it is desirable to mention this under "Remarks" somewhat as follows: "Applicant unloaded part of load to make it accessible for unrestricted inspection."

 (48)

Examples of corresponding QUALITY, CONDITION, AND GRADE statements: (49)

Example I. (Carried as U. S. No. 1)

Quality: Generally well shaped, fairly well to well, mostly well filled, mostly good green color. Grade defects range from 12% in some hampers to 30% in others, average approximately 15% consisting mostly of overmature, yellow pods, with seeds hard, a few crushed or broken pods.

Condition: Stock is fresh with exception of overmature pods reported above, calyxes mostly green, less than 1/2 of 1% decay.

Grade: Load fails to grade U. S. No. 1 on account of grade defects in excess of the tolerance.

Example II. (Inspection requested for resale for U. S. No. 1 or percent of U. S. No. 1 Quality)

Quality: Fairly well to well shaped, pods mostly fairly well to well filled, good green color, 12% grade defects consisting generally of poorly filled pods, few showing bad Pod Spot.

Condition: Stock generally fresh and firm, calyxes mostly fresh and green, some wilted and yellow or brown, no decay.

Grade: Fails to grade U. S. No. 1 on account of grade defects in excess of the tolerance, but is approximately 88% U. S. No. 1 quality.

Example III. (Inspection requested for percent of U. S. No. 1 quality for resale, quality defects within tolerance but condition defects and quality defects totaling in excess of the tolerance.)

Quality: Mostly well filled, some fairly well filled, well shaped, good green color. 8% grade defects consisting mostly of stock showing Pod Spot, some poorly filled.

Condition: Stock mostly fresh and firm, in most hampers 5% to 12% decay, in some none, average for the load 6% decay. Decay is Watery Soft Rot, occurring mostly at random throughout hampers, some in small nests.

Grade: Now fails to grade U. S. No. 1 only account decay, but now is approximately 85% U. S. No. 1 quality, 6% decay.

Example IV. (Appeal inspection, car previously reported 85% U. S. No. 1, decay now reducing percentage of U. S. No. 1.)

Quality: Pods mostly well shaped, fairly well to well filled, good green color, 14% grade defects consisting mostly of badly misshapen and excessively small pods, few overmature.

Condition: Stock generally fresh. 5% decay occurring fairly uniform throughout the load. Decay is Watery Soft Rot and Gray Mold Rot, both in early stages.

Grade: Load now fails to grade 85% U. S. No. 1 quality only account decay but now is approximately 80% U. S. No. 1 quality, 5% decay.

Remarks: This certificate covers an appeal inspection on the above shipment which was previously inspected and reported on joint Federal and California certificate, which is sustained as to permanent factors, decay being a condition factor which is subject to change.

Example V. (For car represented as U. S. No. 1 Green Calyxes)

Quality: Pods generally well shaped, fairly well to well, mostly well filled, good green color. Grade defects within the tolerance.

Condition: Pods generally fresh, less than 1/2 of 1% decay. approximately 1/4 of pods show calyxes fresh and fairly good to good green color, remainder show calyxes wilted and discolored, mostly dark brown.

Grade: Fails to grade U. S. No. 1 Green Calyxes on account of less than 75% of calyxes showing fairly good green color.

Remarks: Inspection requested on basis of "U. S. No. 1, Green Calyxes."

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